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## INAUGURAL LECTURE

# Climate and culture

## Changes, lessons, and challenges[1]

YUNITA T. WINARTO

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Academy Professor in Social Sciences and Humanities
University of Indonesia

ABSTRACT

From generation to generation over the centuries, people in all parts of the world have developed adaptive social-cultural institutions and strategies of natural resource management based on the intimate relationship they had with their environment. At present, recent global warming is threatening people's lives. Unfortunately, climate change is a natural phenomenon which is neither easy to observe, nor to predict and anticipate accurately. In many places, local people can no longer rely on earlier experiences and existing socio-cultural institutions to adjust to unprecedented changes. We are in urgent need of specific efforts to re-interpret and enrich our knowledge of this natural phenomenon. However, this is not an easy thing to do. People from all kinds of levels and entities in society are simultaneously the cause and the victims of global warming. The problem becomes even more complicated because of various mutually-affecting dimensions like ethics, politics, power, economics, and justice. These are the ultimate challenges scholars of the social sciences and humanities need to address seriously everywhere in the world, including in Indonesia. This article addresses the arguments of what scholars in the social sciences and humanities could

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and should do in response to climate change. Promoting a new paradigm and ethics in dealing with climate change is urgent and improvements in approaches and research methodologies are necessary. Learning from experiences gained from the way farmers in Java respond to climate change, the author argues that interdisciplinary research across social and natural sciences, and collaborative work with target groups is a promising and significant step (although scholars will have to face many challenges and constraints).

Keywords
Climate change, ethics, the roles of social sciences and humanities, interdisciplinary research, collaborative ethnography, Science Field Shop.

When I was carrying out my ethnographic fieldwork in Wareng, Gunungkidul, Yogyakarta in 2007, my research team members and I were acquainted with the state's programs to advance farmers' knowledge of the weather and the climate in a so-called Climate Field School (*Sekolah Lapangan Iklim*). As many as 20 male and female farmers participated in the school. They were grateful for the government's effort to assist them to understand the nature of, and changes in, the weather and the climate, and the implications they have on their fields and crops. They followed each session seriously. Throughout the learning period and its follow-up, I noticed a gradual increase in their knowledge and saw them modify their farming strategies following recommendations from the facilitator. At the same time, various parties are struggling to keep up with the climate changes and their consequences on the planet and on people's lives. The world is becoming warmer and life is becoming more uncomfortable. This situation means for some people the creation of "life and death" especially for people whose life depends on the day-to-day weather condition affecting their natural resource strategies. This situation inspires me as a social-scientist and anthropologist, to engage in self-reflection. As a scholar dealing with people's lives, how can I close my eyes to the people's struggle to survive on an earth that is getting warmer and warmer and becoming unprecedentedly vulnerable? How can I move on in such a situation? What kinds of opportunities and potentials may people develop in response to climate change? How, as a scholar, can I help them?

## Culture and climate: a dialectics

Climate change is a natural phenomenon, yet various scholars claim that anthropogenic factors significantly contribute to the problem (*The Britannica Guide* 2008: 4; also see Crate and Nuttal 2009: 10-11):

> [...] anthropogenic factors (those originating in human activity) are responsible for most of the current global warming, with the radiative forcing from anthropogenic sources being over ten times larger than that from all natural components combined. The primary anthropogenic source is the emission of greenhouse gases such as carbon dioxide, which is produced mainly by the burning of fossil fuels.

The burning of fossil fuels, and the emission of methane contributes to the emission of greenhouse gases (Stigter in his communication with farmers in Gunungkidul, Yogyakarta 2007). As cited by Ikawati (2010), FAO reports say that methane is the most dominant gas emanating from the agricultural and

husbandry sector (37%) whereas CO2 only accounts for 9%. Human activities play a significant role here. From an anthropological viewpoint, Crate and Nuttal (2009: 12) argue that: "[…] climate change is ultimately about culture, for in its wake, more and more of the intimate human-environmental relations, integral to the world's cultural diversity, lose place". If climate change is indeed a cultural problem, what are the plausible causal factors leading to the loss of the intimate relationship between people and the environment?

In various parts of the world, local communities who, for generations, have adapted well to their environment, climate change has led to the emergence of risks that threaten their cultures' sustainability. In this situation, the question arises to what extent their strategies of utilizing and conserving their natural resources may be sustained? Their knowledge of the weather and the climate and their implications on the local strategies of natural resource management needs to be reinterpreted in order to adjust to the emerging risks and consequences of climate change. A continuous dialectic between climate change, knowledge, and practice is highly needed to answer questions like to what extent the unintended consequences of their own and other people's practices that contribute to the accumulation of greenhouse gasses in the atmosphere have become part of their knowledge? If their own strategies prove insufficient to enable them to adapt to their changing habitat, we may witness a serious threat to the sustainability of many of their institutions such as the meanings and symbols in their local mythology, cosmology, meteorology, and religion (see Crate and Nuttal 2009). If people can no longer refer to these institutions as the foundation for their actions, what will happen to their lives? There is at present a great need seriously to examine the mechanisms that enable local people to reinterpret their knowledge and their cosmology, such as *pranata mangsa* among Javanese farmers, to adjust to the consequences and the risks of climate change. Will they be able to identify these changes and to develop new adaptive strategies? These questions underlie my decision to collaborate with an expert in agrometeorology and with farmer groups in Gunungkidul, Yogyakarta, and in Indramayu, West Java.

The problems the people face have become increasingly complex since the start of the phenomenon of climate change as its causal factors and consequences are beyond their empirical comprehension and control. As a result, there is a real threat of a decline in food production and an increase in famine and death rates. Based on his findings, OXFAM's representative argues that:

> "Changing seasonality may be one of the most significant impacts of climate change for poor farmers, and that is happening now", Magrath warns. Leaders at the recent G8 summit in L'Aquila, Italy, agreed that average global temperatures should not be allowed to rise more than 2°C. But according to Oxfam even a rise of 2°C entails "death, suffering and devastation" for at least 660 million people by 2030. Oxfam warns that due to the threats posed by climate change and changing seasons, chronic hunger will become more prevalent: "The true cost of climate change will not be measured in dollars, but in millions or billions of lives". (The New Agriculturist, http://www.new-ag.info/focus/focusItem.php?a=927, 2009).

A difference of 2°C may not be a problem for urban people and those who's lives do not depend on utilizing and cultivating natural resources as is the case for millions of farmers in the world. The situation could become worse if the lives of people who do not depend on the climate but who have become the sources of greenhouses gasses emission do not share the risks and threats of that vulnerability. Moreover, what will happen if there are no firm rules and sanctions to force them to pay for the environmental cost of their own actions' unintended consequences, and if these implications do not involve their "interests, concerns, knowledge, and practices". It remains a question whether those rules, sanctions, interests, concerns, knowledge, and practices are part of their "ethics and cultures". If not, what are the problems in the dialectics of climate change and their knowledge and actions? What is wrong with their learning process?

Direct experience and empirical observation are the main means of learning in the local domain of knowledge. Without directly seeing, feeling, and experiencing the phenomena they encounter in daily life, they will not have any confidence or belief in their own or other people's interpretations and assumptions (see Bentley 1989, 1992; Winarto 2004, 2007). Knowledge of the phenomenon that the accumulation of gasses emission in the atmosphere increases the global temperature is an example of knowledge that cannot be grasped through empirical observation and direct experience. In the scientific domain, knowledge can be accumulated by ideas stemming from various sources that do not require direct experiences in the process, though systematic experimentations and the validation of the results are a must.

To understand much of the information in relation to the climate, Roncoli et al. (2003: 181 referring to Thompson and Rayner 1998; Kempton et al. 1995) argue that:

> Recollections of the past, observations of the present, and expectations for the future shape our experience of climate phenomena and our understanding of climate information. Research shows that people filter and absorb scientific knowledge in terms of pre-existing cultural models and aspirations for a desired future.

Climate change is indeed a natural phenomenon that cannot be observed directly, and cannot easily be predicted or anticipated. Is it therefore possible that responses to this natural phenomenon can only rely on recollecting the past, observing the present, and expecting the future as argued by Roncoli et al. (2003)? In my perspective, it will be impossible to find solutions without extra efforts to enrich knowledge, awareness, and even the beliefs and ethics of all the possible negative impacts that may further affect their own and other people's lives. Individuals in the two different domains of knowledge share common experiences, but they live in different situations and contexts of acquiring knowledge, ideas, and perspectives.

The problem relates to Roncoli et al.'s (2003: 181) saying that existing cultural models and aspirations for a desired future affect people's ways of receiving and selecting information on the climate. I argue that these differences

will produce different practices as well. Roncoli et al. (2009: 87) identify further that "[...] common ideas about what is believable, desirable, feasible, and acceptable [...]" affect individual and collective adaptive behaviours. These common ideas determine the information about, and the ways to adapt to climate change. Variation in these ideas will yield differences in practices.

The problem is more complicated because of the involvement of ethics, power, politics, economics, and environmental cost because they are able to create "inequality and injustices" between those who have "power" and those who have not. Crate and Nuttal (2009: 11) argue further that:

> Climate change is environmental colonialism at its fullest development - its ultimate scale - with far-reaching social and cultural implications. […] climate change is a threat multiplier. It magnifies and exacerbates existing social, economic, political and environmental trends, problems, issues, tensions, and challenges.

In this paper, I will present the kind of thoughts I believe need to be developed further in our research and studies. I argue that it is high time now for scholars from Universitas Indonesia to create and to disseminate a new "paradigm", a "new school of thought" in relation to the problems of climate change, culture, and the humanities.

## Establishing ethics, changing the paradigm

During a studium generale at Universitas Indonesia in early December 2009, Stigter (2009) - an agrometeorologist from Agromet Vision (The Netherlands and Indonesia) - strongly argued that the various agencies dealing with climate change should first and foremost hold on to *ethics*. Any state's *policies* should refer to these ethics, and *science* with all its apparatuses and implementations has to support these policies. Mutually supporting *ethics*, *policies*, and *science* have to be the main important bases for the development of educational perspectives (Stigter 2009). Nevertheless, Stigter (2009) also raised a rhetorical question: "Why does it almost nowhere work like that?". It is not only the "muddled relationship" between the three elements that leads to the incongruence of ethics, policies, and science, but also another question remains: "Are there any ethics underlying all decisions and policies by those in power?". If greedily gaining profits is the main aim to be achieved in natural resources management, can we say that we have the ethics to deal with the consequences of those greedy practices?

It is time now to move away from all forms of "greediness" in our utilization of natural resources. Establishing ethics in fulfilling our needs and in gaining profits, in creating ecological-friendly technology and natural resource management, is a must. In relation to climate change, we need to broaden our minds and our thoughts. Our perspectives of perceiving our landscapes, seascapes, and aeroscapes have to be widened as well. Many things that so far have not been part of our minds and attentions should be more carefully examined, including the vulnerability of the life of farmers and fishermen who depend entirely on the climate and on the weather in their

natural resource management strategies. Their lives should become the focus of our thoughts and concerns.

At the end of the 1980s, Robert Chambers et al. (1989) introduced the so-called *Farmer First* paradigm in agricultural development. The needs of farmers should become the first priority in agricultural development. This is an example of how they introduced a paradigm shift. This paradigm is an example of the scholars' role in creating and strengthening the ethics in natural resource management. In 1992, the *Beyond Farmer First* paradigm (see Scoones and Thompson 1994) was expressed and circulated widely by a group of scholars who evaluated and reflected on Chambers' earlier steps. Fifteen years later, in 2007, a thorough evaluation was carried out during an international workshop: *Farmer First Revisited* (Scoones and Thompson 2009) of the extent to which the *Farmer First* paradigm has been seriously considered by decision makers, scholars, and practitioners all over the world as their the underlying perspective. The workshop's participants agreed that: "[…] there is an urgent need to reinforce and expand the 'Farmer First movement' and create a more united and coherent front" (Sconees and Thompson 2009: 208-209).

> Climate change management should also follow scholars' initiatives. Our colleagues in the West have introduced the discourse on *Pro-poor and People Centered Climate Change*. We should do the same. The question remains: Are we ready to do that? How and where are we going to start to create these new ethics and this novel paradigm?

## The Studies of Social Sciences and the Humanities: not complementary

Since people are both the cause and the victims of climate change, I strongly argue that scholars and the studies of the social sciences and humanities should not be a complementary part in efforts to resolve these "complicated works" but should be at the forefront in establishing the ethics and the new paradigm needed to deal with climate change. These scholars have a significant role indeed in examining the complexity of the causes and effects of climate change, as well as the mechanisms of acquiring knowledge of that natural phenomenon and its implications on the people and the planet. Information on weather and climate conditions is not always easily accessed in time. It is also not at all easy for scholars to carry out their work. Why? Soon, they have to face many challenges.

As a scholar of social sciences and the humanities, I argue that we do not need to be trapped in "mitigation and adaptation" as widely propagated by various parties (politicians, economists, international donor agencies, practitioners) to differentiate ways of solving problems: of either mitigating the greenhouse gasses emission or adapting to the consequences of climate change (see the diagram on Responses to Climate Change in Meinzen-Dick et al. 2010: 1). If the main issues are: the absence of ethics, of a paradigm, and of policies, the need to improve people's knowledge and capability in understanding the consequences of climate change on themselves and other people, and the complexity of the problem, how then could these issues be classified under

these two categories? I understand that these categories are used as the basis for decisions taken by policy makers and international donor agencies in allocating their financial resources and in defining their strategies. However, I invite my colleagues from the social sciences and the humanities to "get into those diverse compartments", avoid to be trapped in one compartment only, and, where necessary, break down the walls between them. Scholars of social sciences and the humanities do not produce complementary studies in either "mitigation" or "adaptation" when examining the social-cultural dimension is considered necessary. The social-cultural-humanities dimensions are integral parts and even lie at the core of these studies.

Another issue is the social scientists' "lack of subject's confidence and belief" when dealing with climate change issue. "Why should an anthropologist carry out a study on climate change? Why should an anthropologist facilitate us in measuring rainfall?" (Farmers' reflection in Indramayu, field note, 2010). These questions reflect the "cultural images part" (for examples: arts performance, religion, kinship, language, media studies, et cetera.) of the social sciences-humanities' identities and works, not the problems that become the focus of scholars from life and natural sciences.

I argue that a thorough reflection of our own capabilities and our contribution is indeed necessary.

- First, by acknowledging the long histories and developments in disciplines like archeology, anthropology, and history in examining the interaction between people and the environment. I think that a reflection of our potentials to play a more significant role in the study of climate change is indeed necessary.
- Second, we need to move across the boundaries of our disciplines and studies in order to build up networks and collaborations with other disciplines in *inter-disciplinary* research, not in multi-disciplinary ones.
- Third, we have to move forward and enter the "public" domain by involving other parties to collaboratively examine, learn, and understand the patterns and variability of climate change and its unintended and unexpected consequences.

## Engaging in self-reflection, sharpening potentials

Different disciplines in social sciences-humanities use their own theoretical, conceptual, and methodological approaches. Considering the complex sequential causes and effects of climate change that originate from and ends with human activities, each discipline should be able to develop its own research. They could each focus on a "particular hole" to be examined, described, and explained, and find out who the agents are, what its consequences are, and why things occur the ways they do. However, we have to deepen our knowledge and expand our perspectives in order to understand the details of the constituting parts, mechanisms, and processes of weather and climate formation, its patterns and variability, and its implications to earth. Where necessary, we should adopt the concepts and methods of other

disciplines in order to sharpen our own analyses.

Based on my experience as an anthropologist, I think the following should be done:

a) Focus on "human agency" (see the discussion on agency in Ahearn 2001; Ortner 2006; Hassan 2009) in observing, describing, and understanding people's behaviours; their needs, interests, and objectives; and the consequences of their actions on other people and the environment and their implications on global warming.
b) Enrich our research with detailed and in-depth ethnographic study and keep improving that method, for example, by adopting an approach of multi-sited and collaborative ethnography complemented by complicit reflexivity (see Marcus 1998, 2001; Holmes and Marcus 2005).
c) Trace the contexts of the events we observe in order to be able to explain why and in what kinds of situations these events emerge and what their consequences are on the environment and the people (see Vayda 1983, 1996). To explain the context, we can use the theories, concepts, and methods from a variety of other disciplines where necessary. An inter-disciplinary approach needs to be developed further.[2]

## Breaking the Niche: a reflection and a challenge

It will prove difficult for social science-humanities scholars to examine climate change if they remain in their own "niche". They need to enter the "public" domain. and we should learn from anthropologists who have moved towards "Public Anthropology" as stated by Borofsky (2002):

> Public anthropology engages issues and audiences beyond today's self-imposed disciplinary boundaries. The focus is on conversations with broad audiences about broad concerns. [...] Public anthropology seeks to address broad critical concerns in ways that others beyond the discipline are able to understand what anthropologists can offer to the re-framing and easing - if not necessarily always resolving - of present-day dilemmas.

Engaging in "Public Anthropology" will require major efforts. Lassiter (2005b: 84) says that the problem an anthropologist faces at present is how to integrate theory and practice, how to equally combine academic and applied anthropology in executing shared projects, and in bringing anthropology closer to the wider public within and outside academia. In relation to that, Lassiter, referring to Peggy Sunday (1998 in Lassiter 2005b: 84) further says,

[2] For various examples of studies in anthropology, archeology, and others, see *Weather, climate, culture* edited by Sarah Strauss and Ben Orlove (2003), and *Anthropology and climate change; From encounters to actions* edited by Susan A. Crate and Mark Nuttall (2009). Following the ideas voiced by Crate and Nuttall (2009) that anthropologists need to move from only "encountering" climate change to "acting", I also argue that anthropologists and other scholars from social sciences-humanities should follow their predecessors in developing and entering the domain of Public Anthropology.

> [...] merging public anthropology with public currents "is more than a focus for research; it is a paradigm for learning, teaching, research, action, and practice within the field of anthropology".

Sunday's statement as cited by Lassiter clearly reveals that entering anthropology into the public domain is not only a matter of carrying out research. It is a paradigm that underlies various academic activities and practices. New developments in social sciences-humanities indeed require new paradigms to examine and act upon the diverse range of issues and problems our contemporary world faces. As holder of the Academy Professorship Indonesia in Social Sciences and Humanities at Gadjah Mada University and Universitas Indonesia, I would like to share some experiences I gained while carrying out research on climate change from 2007 to 2010. I engaged in two activities that produced major advantages for various parties:

- I collaborated with an expert from another discipline, namely an agrometeorologist; and
- I developed a collaborative network with farming communities, which are usually only the subjects of anthropological research but do not collaborate in research.

## Initiating an inter-disciplinary approach

In 2007, a posting in the Farmer Field School's mailing list network unexpectedly inspired a Dutch agrometeorologist residing in Bondowoso, East Java, to visit my field site in Gunungkidul, Yogyakarta. After meeting with a group of farmers in the hamlet of Wareng IV, Gunungkidul, Yogyakarta he decided to assist farmers who were alumni of a Climate Field School, to continue their detailed observation of their own fields, crops, and changes in the weather and the climate. What kind of changes in their environment had they observed, based on their local knowledge and their cosmology of the climate? The question was posed to these farmers to stimulate their motivation to act as good observers of changes in their own habitat. Based on these observations, what farming strategies needed to be modified? To what extent could they still refer to their local cosmology, *pranata mangsa,* to define their planting schedule, or did they need to reinterpret their cosmology? Farmers learned how to measure rainfall and soil humidity during their training in the Climate Field School (CFS). However, when the training had ended, no equipment was left in the farmers' hands. Also, the farmers received no information from agricultural officials or from the Meteorology, Climatology, and Geophysics Office (*Badan Meteorologi, Klimatologi, dan Geofisika* (BMKG) or any warning of future weather conditions. The agrometeorologist then decided to purchase rain-gauges in the United States to help the farmers to measure rainfall.

My first collaborative work with an agrometeorologist in an ethnographic fieldwork by measuring rainfall and observing the agroecological conditions of farmers' fields started in the early 2008. From that time, my research team and I assisted farmers in day-to-day rainfall measurement and agroecosystemic

observations. We focused our questions on: the advancement of knowledge the farmers gained over time, in particular in periods when they experienced heavy and continuous rainfall for days on end, or contrarily, during periods of prolonged drought. What happened to their field conditions and the growth of their crops? What were their own interpretations? What kinds of responses did they make? The agrometeorologist assisted in issues like where to put up rain-gauges, and how and what to observe. During regular visits, he engaged in dialogues with the farmers at their homes or in their fields focusing on a variety of questions the farmers had (see Winarto et al. 2008; Stigter et al. 2009).

This was a very enriching learning process, not only for the farmers, but also for anthropologists and junior natural scientists, and us. We gained lessons-learned in both the agrometeorological dimension of climate change and in the following empirical realities:

- farmers' observations of both the conducive and the constraining factors;
- changes in farmers' farming schedules as a result of their advancement in relating the rainfall condition (in qualitative-narrative forms) with their findings based on daily rainfall measurements, along with their increased understanding of their fields' agroecosystematic conditions. Farmers could more precisely cite the outcomes of the rainfall conditions and, with those numbers, could better anticipate their fields' agroecosystem and their crops' growth under particular weather conditions;
- the growth of a new *habitus* in documenting their observation which could sharpen their critical analyses;
- the development of farmers' curiosity about the questions they had after their daily observations and their relation to meteorological conditions, including their cosmology (*pranata mangsa* the cycle of eight years in the Javanese calendar system); and
- their understanding of the need to modify their farming and water management strategies for dry-rain fed farming (for examples, changing seedling practices, implementing 'rain-harvesting methods' – building ridges in the field to protect water and soil humidity), and choices on varieties and crops matching particular weather conditions.

The advancement in the farmers' understanding and in their changing practices in a relatively short period could not have been realized without the collaboration of the agrometeorologist and the farmers in daily rainfall measurements and agroecosystematic observations. Nevertheless, measuring rainfall would not yield any significant improvements in only a one-year planting season. At least, a minimum of three years observations needs to be carried out in order to understand the patterns underlying, and the variability of, the climate. Experiments in modifying farming strategies in order to cope with changes also require more than one planting season. A longitudinal research is, thus, necessary. These requirements produce some

challenges; not only did we need long-term financial support, but also both parties' strong commitment and stamina was important to sustain longitudinal collaboration. A complex set of factors affect people's minds and behaviours. As an anthropologist who studies different forms of communities and cultures, I have to admit that I was often surprised by what I encountered in dealing with the subjects. A collaborative ethnography (see Lassiter 2005a, 2005b; Marcus 1998, 2001) proved to be not quite as easy as I had imagined. Continuous reflection was necessary.

## Developing collaborative ethnography

Collaborative ethnography, as argued by Marcus (2001: 521) "[...] entails joint production, but with overlapping mutual as well as differing purposes, negotiation, contestation, and uncertain outcomes". Each collaborating party agrees to cooperate to achieve its own objectives and expectations. To what extent do these objectives converge or, on the contrary, diverge from one another? Negotiation is thus necessary, in particular if there are various contestations and differing purposes. Their joint production could also yield unexpected and unintended results. A continuous subjective reflexivity by both parties is a must. In this kind of process, the ethnographer can no longer merely act as an observer. The researcher plays a significant role in any decision making with their counterpart, while at the same time, keeps observing what is going on, how, and why. Playing these two roles is not easy but it is precisely the biggest challenge for the ethnographer to manage any emerging problems and constraints, while questioning why they occur in the way they do.

Equipped with my team's experience in building up a research collaboration with a group of farmers - the *Sedio Mulyo* group - in Wareng IV, Gunungkidul, Yogyakarta in 2008-2009, we initiated the same activity in the Indramayu regency. The farmers were represented by the Indonesian National Integrated Pest Management Farmers' Alliance of Indramayu Regency (IPPHTI Kabupaten Indramayu) which took decisions on behalf of its members and on those of other farmers. See Diagram 1 for the collaborative system and the aims the two parties achieved.

As shown in the diagram, the farmers acted as the observers of rainfall and the agroecosystematic conditions of their own fields. As the farmers' counterparts, the scholars guided them in the way to carry out daily rainfall measurements and documentation, and what to observe in the details of their fields' conditions and the growth of their crops. Data processing and interpretation, and presenting it to the farmers and other parties were part of the work of the scholars. After the farmers had discovered the most vulnerable aspects of their agricultural practices, the scholars would help them in developing a Climate Field School (CFS). Different from the government's CFS with their ready-made curriculum, the CFS' curriculum and training in this scheme was focused on solving the farmer's most vulnerable problems in a particular place by involving their active participation in developing the curriculum. Throughout these activities, a kind of network between farmers

and scholars was developed, which Stigter calls a Science Field Shop (*Warung Informasi Ilmiah*) (see Diagram 1).

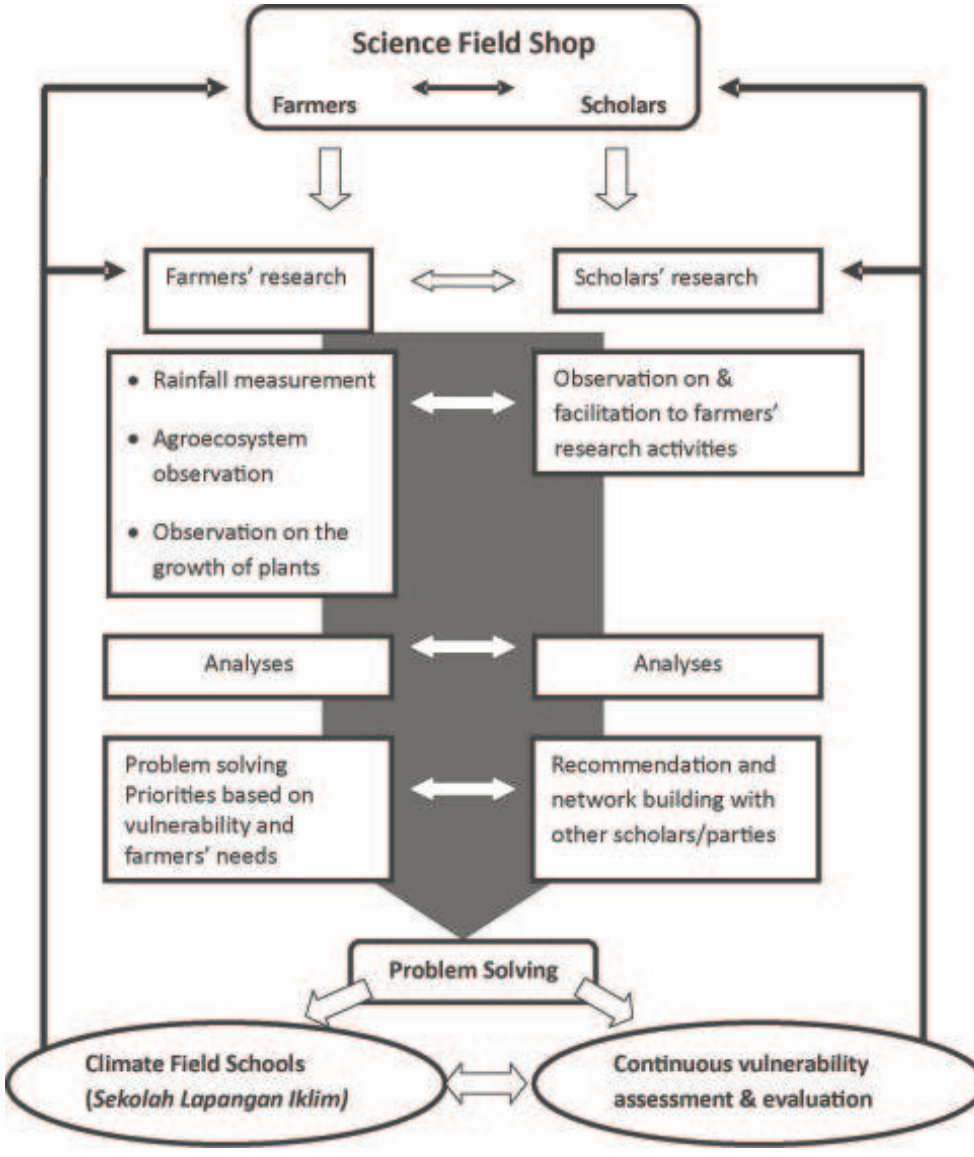


Diagram 1. Working collaboration between farmers and scholars (source: Winarto et al. 2009, 2010).

Ideally, farmers and scholars would exchange knowledge from the outset of their collaboration and throughout the difficult times the farmers had in facing the risks of the unexpected climate change. If water management was the problem, a hydrologist would be invited to assist. If outbreaks of pests and diseases were the problems after high humidity and continuous heavy rains, an entomologist would be called in to assist the farmers. Creativity and innovation from the two parties played a significant role here. Scholars from social sciences

and humanities acted as mediators between experts from various disciplines, the scientists' counterparts in transmitting scientific ideas to the farmers, the farmers' facilitators in carrying out the work and as developers of a new "habitus" in doing research and note-taking, as well as acting as observers of the entire process. The results of this kind of collaborative work were not only the CFS or the problem-solving programs at one period of time, but also continuous vulnerability assessment, the development of the inclusion of local knowledge into scientific endeavours, as well as the advancement of the scientific knowledge of the patterns and the variability of climate change, the implications on the farmers' habitat, and contextual factors.

That was the ideal feature and objective. However, the reality in the field revealed the complex social-cultural problems underlying the implementation of such a collaboration. Its sustainability was under question. Not only was financial support a constraint in carrying out a longitudinal study, but also the natures and perspectives of the local and the scientific domains of knowledge through each parties' diverse interpretation proved to be a hindrance. My reflection leads me to formulate the following constraints and challenges:

- The four decades of the Green Revolution in crop farming with its various kinds of "project-based programs and funding" caused the farmers to adopt a "project-based culture in crop farming". The implementation of an agricultural development program means that "funds" are allocated to officials as well as farmers. Accordingly, any research activity introduced by scholars would also be perceived as "bringing them some money", and thus any learning program was expected to do the same. At the time we did our work in Indramayu in 2009-2010, various kinds of "government projects" were introduced to the farmers.
- Farmers have become used to receive recommendations and guidance from the agricultural extension worker and officials to keep improving their production. Producing high yields is each farmer's dream. So, the question was what the practical benefits and advantages of measuring rainfall in producing high yields were? The success of a learning process, of course, cannot be measured only by gaining high yields in a short period of time.
- The alumni of the Integrated Pest Management Farmer Field Schools (IPM FFS) developed various kinds of experimentations they themselves called *Sains Petani* (Farmers' Science). However, carrying out detailed, systematic, highly motivated, and disciplined observations to carry out the study coupled with the need to gather careful documentation could not significantly change the farmers' perspectives on farming for high yield production.
- The farmers had difficulty understanding the importance of scientific ways and procedures in measuring rainfall so that they could share the results of their work among each other and to a wider audience, including policy makers.
- Building up research collaboration should incorporate the local elites by

also paying attention to existing patterns of power relations among elites and commoners. The question is: to what extent would the local elite be able to accommodate, accept, and facilitate collaborative consensus and agreements? Their responses, perceptions, attitudes, and actions play a significant role in ensuring the success of collaborative research.

- Working in a group and reaching consensus also depends on the local leaders and their leadership, in particular in the absence of the social institutions to work collectively in solving vulnerability problems.

Accordingly, as mentioned by Marcus (2001), the main elements of any collaborative research are negotiation and contestation between the two parties. Ortner's (2006) saying that *agency* entails power relations is indeed true. How power relations take shape in each collaborative work varies from one place to another and from one farming community to the next. Examples for this are the similar and diverse natures of power relations between two farming communities: one in Gunungkidul, Yogyakarta (dry-rain fed farming community) and one in Indramayu, West Java (intensive irrigated rice field community) along with their specific local, social, cultural, and historical contexts. Experience and lessons-learned from building up collaboration with the two farming communities provided my fellow counterparts, assistants, students, and myself with a significant means to define our responses and standpoints in dealing with the farmers in each locale. A collaborative research cannot be packaged in a uniform way for diverse and heterogeneous farming communities with their varied social-cultural lives.

Unintended and unexpected things beyond scholars' anticipation do emerge. Responding to these, various dimensions of personhood such as emotional maturity and strong personality coupled with continuous mental and emotional exercises are at the basis of a scholars' behaviour, which can, unfortunately, not be learned and taught at school. We also cannot find them in our text-books. Sunday is right (as cited by Lassiter 2005b) that collaborative ethnographic research is not merely research. It is a paradigm that combines the components of learning and teaching, research and practical actions, as well as ethics. These are the richest learning processes that should not be eroded due to constraints and challenges. An opportunity to develop such a learning process as part of the curricula in the universities and other institutions of higher education should be seriously considered.

## This is the time to act: are we ready?

Whatever constraints and challenges we have, our planet has been undergoing and is going to experience continuous changes. The question remains: are we always ready to reflect on and to modify our tradition? This is a question not only for business people and practitioners in utilizing natural resources, but also for academicians in improving their science and education. It is high time to do something. We cannot delay it any longer. Based on my experience as Academy Professor in Social Science and Humanities under the auspices of

two highly prestigious academies: The Royal Netherlands Academy of Arts and Sciences (KNAW) and the Indonesian Academy of Sciences (AIPI) in two different universities (Gadjah Mada University and Universitas Indonesia), I believe that it is possible to change our "academic tradition". However, are we ready to break the proud walls of our disciplinary boundaries? Are the scholars of the social sciences and humanities ready to initiate efforts to develop their potentials and to move forward across their disciplines? Are the universities' leaders ready to facilitate longitudinal collaborative, inter-disciplinary studies? Do donor agencies agree to shift their paradigms in defining the allocation of financial support? The most challenging one is the extent to which scholars in a university such as Universitas Indonesia are able to act as pioneers in formulating ethics and to change the paradigm in natural resource management among those in power: the bureaucrats, policy makers, business people, and practitioners, as well as the communities at the grass-root level? Can we continuously modify our "culture" in response to the upcoming, unexpected, and unanticipated changes of our planet? With a great motivation, spirit, and the will to move on, I strongly argue that we can build a path together towards the sustainable future life of our people and our planet.

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